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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/649,270	08/28/2000	Lawrence A. Crowl	SUN1P380/P4501	6759

22434 7590 08/12/2003

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EXAMINER
VU, TUAN A

ART UNIT	PAPER NUMBER
2124	4

DATE MAILED: 08/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PR4

Office Action Summary	Application	Applicant(s)	
	09/649,270	CROWL ET AL.	
	Examiner	Art Unit	
	Tuan A Vu	2124	

-- The MAILING DATE of this communication appears on the cover sheet with th correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *24 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-16 and 18-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-16, 18-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 August 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This action is responsive to the Applicant's response filed June 24, 2003.

As shown in Applicant's response, claims 1, 3-6, 8-13, 15-16, and 18-21 have been amended with claims 2, 17 cancelled. Claims 1, 3-16, and 18-21 are pending in the office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 7-8, 10-13, 16, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Unger et al., USPN: 5,991,173 (hereinafter Unger), in view of Porter, USPN: 6,163, 811 (hereinafter Porter).

As per claim 1, Unger discloses a method of generating compiler products (e.g. Fig. 7) in a compressed form, said method comprising:

compressing a portion of compiler information to obtain compressed compiler information (e.g. steps *210, 212, 213, 214*, Fig. 8); and

producing a compressed compiler product based on at least the compressed compiler related information (e.g. step 218, 219, Fig. 8; col. 12, lines 1-6).

But Unger does not specify the portion of the compiler information being compressed comprises program symbol names. Unger however discloses that the compiler information being compressed includes textual symbol names (e.g. *vocabulary word, token* – col. 9, lines 5-30; *numeric string, currency symbols* – col. 10, lines 23-39). Porter, in a method to tokenize source

code for compression like Unger, discloses parsing tokenized programming constructs, i.e. symbols (e.g. Fig. 1a-c, 2a-b, 3a-b), hence shows applicability of the processing scheme on browser textual constructs (e.g. Fig. 4; col. 2, line 21-34) as well as programming language constructs in conjunction with browser technologies as suggested by Unger. It would have been obvious for one of ordinary skill in the art at the time the invention was made to implement the parsing of text documents by Unger so as to further include the parsing of programming language symbols as taught by Porter because natural language and program symbols are closely related for being human readable language; and the effect of such parsing ability would further extend the method of compressing and improve product marketability (browser and programming source code) for Unger.

As per claim 7, Unger discloses that the source program to compile is HTML material such as HTML, XML, SGML files (e.g. col. 5, lines 1-12); but does not specify that the source program is a programming language written in C++, Java, Pascal, or Fortran. Porter, in a method to compress application code using tokenized source data and symbol storage and web page for source file (e.g. col. 2, line 21-34) as mentioned above, discloses applying compression to Java program source code (e.g. col. 4, lines 6-24; Figs. 1-3). It would have been obvious for one of ordinary skill in the art at the time the invention was made to use a source program written in Java as taught by Porter and submit it to the compression process used by Unger because Java language programming and its products are well-known for their portability and platform independency as well as support of many browser applications and material, i.e. HTML, XML applications just as suggested in Unger's invention.

As per claim 8, Unger discloses parsing and compressing browser documents but Porter from above discloses compressing of program code using tokenized process analogous to Unger. In view of the rationale in claim 1 using Porter's teachings for addressing the program code symbols parsing, the limitation as to compress an object code file would also have been obvious herein because one ordinary skill in the art would be motivated to combine using the browser compiler/parsing schemes by Unger and enhance those with capabilities to parse program code and compress such code as taught by Porter in order to yield compressed version of such parsed program as intended by Unger, because object code delivery in compressed form would facilitate distribution and storage resources saving.

As per claim 10, Unger discloses a method for generating uncompressed symbol names being associated (col. 9, lines 5-30; col. 10, lines 23-39) with compiler information, said method comprising:

identifying a compressed symbol name being associated with compiler information (*token, words, strings* – col. 16, lines 8-17; Fig. 5);

obtaining information relating to the compressed symbol name (e.g. *dictionaries* – col. 38-55); and

decompressing the compressed symbol name to obtain a symbol name in a uncompressed form (col. 15, line 60 to col. 16, line 7).

But Unger does not specify that the uncompressed or compressed symbol names are program symbol names. But this program symbol name limitation would have been obvious in view the corresponding rejection set forth in claim 1 using Porter's teachings, and is rejected herein with the same rationale as set forth therein.

As per claim 11, Unger suggests obtaining information (*tag tree 54, vocabulary 58* – Fig. 7) referenced by a program symbol reference (*hyperlinks* – col. 7, lines 32-44; *tag* -- Fig. 4,5) included in the compressed program symbol name (e.g. step *214, 220, compressed objects/text* - Fig. 8), such symbol reference providing a reference to a base program symbol (*files A and J, pages C, I* -- col. 7, lines 32-44; Fig. 5) that is associated with the program symbol name represented by the compressed program symbol name (*compressed objects/text* – Fig .8; col. 9, lines 5-30; col. 10, lines 23-39). Further, Porter teaches pointer referencing symbol table (e.g. Fig. 2a-b); hence, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the referencing as taught by Unger for browser documents so as to implement the pointing technique as taught by Porter when applying to programming language because this would enhance the compression method by Unger in case this method would extend itself in tokenizing and compressing programming language for the benefits as set forth in claim 1 above.

As per claim 12, Unger (with Porter's teachings) further discloses that the program base symbol is the container of the symbol represented by the compressed program symbol name (e.g. *files A and J, pages C, I* -- col. 7, lines 32-44 – Note: compressed text or numerals in objects of Fig. 8 are contained in files or pages referenced by links, tag or hyperlinks in Fig. 5. This is equivalent to base symbol, or containers, e.g. files/pages A, J, C, I, for text data symbols compressed in objects/text of Fig. 8).

As per claim 13, Unger discloses a compilation system suitable for compiling source programs, said compilation system comprising:

an enhanced compiler suitable for generation of enhanced compiler products (products *54-62* – Fig. 7), such compiler compiles a source program to produce enhanced compiler products with a reduced size in comparison with conventional compiler products (e.g. col. 1, line 47 to col. 2, line 39; steps *210, 212, 213, 218* -- Fig. 8); and

at least one enhanced non-compiler component that understands and utilizes the enhanced compiler products (e.g. *proxy* – col. 14, lines 14-58).

But Unger does not specify that the source program has at least one compressed program symbol name. But this program symbol name limitation has been addressed in the corresponding rejection set forth in claim 1 using Porter's teachings.

As per claim 16, this is a computer-readable medium claim corresponding to claim 1 above, including all the limitations therein, hence is rejected herein for the same reasons as set forth therein.

As per claim 21, this is a computer-readable medium claim corresponding to claim 10 above, including all the limitations therein, hence is rejected herein for the same reasons as set forth therein.

4. Claims 3-6, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Unger et al, USPN: 5,991,173, and Porter et al., USPN: 6,163, 811, as applied to claims 1, 16 above, in view of Burrows, USPN: 6,005,503 (hereinafter Burrows).

As per claim 3, Unger (with Porter's teachings) discloses compressing operable to reduce the length of a plurality of program symbol names using encoding schemes (*Huffman, Lempel-Ziv* -- col. 8. lines 45-52); but does not specify such encoding scheme is differential encoding scheme. One of ordinary skill in the art would recognize that the differential encoding

scheme is analogous to the delta encoding which encodes the difference between 2 sets of data. One of ordinary skill in the art would recognize the more complicated scheme of encoding such as in Huffman's or Lempel-Ziv's, which uses predictive and probabilistic computation, and the differential encoding scheme using only simpler utilities to extract difference. Such differential encoding scheme, or delta encoding, reduces storage as well as demands less computation in regard to the subsequent decoding or reconstructing of encoded data; and this teaching is disclosed by Burrows in a system to reduce memory resources usage (e.g. col. 2, lines 7-25; *delta values* –col. 3, line 45 to col. 4, line 38; col. 5, lines 3-26) analogous to the data size reduction technique used by Unger's compression method. It would have been obvious for one of ordinary skill in the art at the time the invention was made to implement the differential encoding scheme as taught by Burrows to further complement the encoding techniques mentioned by Unger (with Porter's teachings) because the differential scheme uses a simpler algorithm hence can obviate further computing resources usage, e.g. predictive computation related resources used in Huffman or Lempel-Ziv encoding as suggested by Unger, and which also enable a less complicated decoding/reconstructing scheme just as noted by Burrows above.

As per claim 4, Unger (with Porter's teachings) discloses encoding a program symbol name in the compiler information (Fig. 8; col. 8. lines 45-52) with a encoded format but does not specify identifying a program symbol name that is encoded in an extended format encoding; nor determining a differential encoding for the symbol name; nor replacing the extended format encoding for the symbol name with the differential encoding. But in view of the teachings by Burrows to encode symbol characters or integers using the delta, just as mentioned in Burrows' system in claim 3 above, one of ordinary skill in the art would recognize therein the presence of

both symbols prior to the delta being computed and those making up the delta list, hence it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the differential encoding by Burrows and apply it to Unger's method and establish the distinction between the encoded symbols prior to the delta extraction, i.e. identifying the extended format encoded symbols, and the symbols making up the delta portion, i.e. determining the differential encoded (delta) symbols, in order to replace the extended format of such symbols by the differential encoded format thereof. One of ordinary skill in the art would be motivated to do so because of the same reasons rendering claim 3 obvious as set forth therein.

As per claim 5, Unger (with Porter's teachings) discloses determining a program symbol name identifier (e.g. *token* – col. 8, line 54 to col. 9, line 14; *token range* – Fig. 9); and attaching such identifier to the encoding (Fig. 8; *token numbers* -- col .9, lines 39-54; steps *210,212* – Fig. 8). However, Unger does not disclose that such encoding is a differential encoding; but this limitation has been addressed for obviousness in claim 3 above and herein is rejected for the same rationale therein.

As per claim 6, Unger (with Porter's teachings) discloses a container reference to indicate a container name associated with at least one of the program symbol names (e.g. *Token Range* – Figs.9, 10).

As per claim 18, this is a computer-readable medium version of claim 3 above; and includes all the limitations of claim 3; hence is rejected herein for the same reasons set forth therein.

As per claim 19, this is a computer-readable medium version of claim 4 above; and includes all the limitations of claim 4; hence is rejected herein for the same reasons set forth therein.

5. Claims 9, 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Unger et al, USPN: 5,991,173, and Porter et al., USPN: 6,163, 811, as applied to claims 1, 13, 16 above, in view of (no author) G06F011/28 by Derwent 1998-236084, JP Pub N: JP 10074152A (hereinafter JP-DW-1998)

As per claim 9, Unger only discloses that the compressed compiler related product has some debugger information (e.g. *tag tree* -- Fig. 7; *determining how* -- col. 7, lines 39-64; col. 14, lines 18-54; Fig. 13; step *700, log file 702* – Fig.14) via the tag tree and dictionary which are information used in conjunction with consistency checking between hyperlinks and related compressed HTML files, i.e. debug information supportive of the hypertext material re-assembling/binding from transfer across a network. But Unger does not specify compressing such debug information into Unger's compiler related product. JP-DW-1998, in a debug system for compressing and delivering compressed program code similar to Porter's method, discloses including debug information as suggested by Unger in the compressed form suitable for storage (JP-DW-1998: see front page and abstract). Hence, It would have been obvious for one of ordinary skill in the art at the time the invention was made to include the information used by Unger (with Porter's enhancements) to help debug the compressing/parsing process as disclosed in the compressed compiler product as suggested by JP-DW-1998 because such debug material would enable debug and/or support the execution of the code when uncompressed and utilized by the recipient to which the code is delivered.

As per claim 15, Unger (with Porter's teachings) teaches an enhanced compressed compiler product selected from being an object file, but fail to specify including therein an executable and a debugging information. JP-DW-1998, in a debug system for compressing code as mentioned in claim 9 above, discloses compressing both the debug information and executable code in the deliverable that is to be loaded on the target computer (JP-DW-1998: see front page and abstract). In view of the rationale in claim 8 to combine Unger teachings with Porter's for providing object file code, it would also be obvious for one of ordinary skill in the art at the time the invention was made to further include executable code and debug information in the compressed product as taught by JP-DW-1998 in order to enhance the utilization of the compressed code delivered as suggested by Porter as to facilitate the debugging and additional memory usage as suggested by JP-DW-1998.

As per claim 20, this claim includes the same limitations as claim 15 above, hence is rejected herein for the same reasons as set forth therein.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Unger et al, USPN: 5,991,173, and Porter et al., USPN: 6,163, 811, as applied to claim 13 above, in view of Klein S.T., Bookstein A., Deerwester S., "Storing Text Retrieval Systems on CD-ROM: Compression and Encryption Considerations", July 1989, ACM Trans. *On Information Systems 7*, pp. 230–245(hereinafter Klein).

As per claim 14, Unger (with Porter's teachings) discloses using encoding technique to reduce size of the enhanced compiler product (Unger: *Huffman* -- col. 8. lines 45-52), e.g. Huffman encoding; but does not specify that such reduction is up to 40 percent of sizes of conventional compiler products. Klein, in a analogous method to compress text data for a

storage medium, discloses that Huffman encoding can achieve between 48% and 52.5% compression of English text, using different character bytes setting (p. 5, last paragraph) or between 40-65 % for text or dictionary, respectively (p. 22, Table 1). It would have been obvious for one of ordinary skill in the art at the time the invention was made to implement the statistical results by Huffman encoding such as taught by Klein into Unger's technique of compressing using the same encoding technique because targeting and achieving up to 40% in size reduction would better preserve storage resources as intended in Unger's compression technique.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat No. 5,881,151 to Yamamoto, disclosing compacting compiler product for virus checking.

8. Applicant's arguments with respect to claims 1, 3-16, 18-21 have been considered but are moot in view of the new ground(s) of rejection.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan A Vu whose telephone number is (703)305-7207. The examiner can normally be reached on 8AM-4:30PM/Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703)305-9662.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 746-7239, (for formal communications intended for entry)

or: (703) 746-7240 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA. , 22202. 4th Floor(Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

VAT
August 2, 2003

Todd Ingberg
Primary Examiner
Group 2100